

DIRECTOR GENERAL BORDER ROADS
GENERAL MAINTENANCE INSTRUCTION NO. 81
ON
MAINTENANCE AND LUBRICATION
OF
CRAWLER TRACTORS TD-25

Introduction :-

1. Regular servicing and periodical maintenance are essential to prolong the life of the equipment, ensure timely repairs to arrest defects from developing into majors ones, to work the equipment effectively at all times, minimize inopportune breakdowns and downtime losses.

Aim :-

2. (a) To enumerate the details of periodic and preventive maintenance and lubrication of CRAWLER TRACTORS.
- (b) Issue CHECK CARD for use by Mobile Maintenance Team.

Action By :-

3. (a) User Units :- To carry out periodic Inspection, regular servicing and preventive maintenance tasks as laid down.
- (b) Field Workshops (GREF) :-
 - (i) To check the 'Record of Maintenance and Lubrication' in the log book of the eqpt during its inspection and repairs, if carried out as per Maintenance and Lubrication schedules given in this instruction.
 - (ii) Advise user units in respect of any discrepancy noticed.

Details:-

4. Details of Maintenance and Lubrication alongwith the periodicity have been tabulated in Appendix 'A' to this instruction.
5. This instruction will read in conjunction with General Maintenance instruction No. 66

PREVENTIVE MAINTENANCE – CRAWLER TRACTOR

S/No.	Item/Assys	Maintenance Instruction	Lubrication	No of points
1	2	3	4	5

10 HOURS TASK

1	General	(a) Check oil, water and fuel leakage. (b) Check for exhaust smoke colour, noise or vibration (c) Read all gauges & meters (d) Check all bolts and nuts if loose or deficient		
2	Engine crank case	Check oil level top up if required	Engine oil	1
3	Steering system	Check oil level	Engine oil	1
4	Hydraulic oil	Check oil level	Hyd oil	1
5	Transmission	Check oil	Gear oil	1
6	Fuel tank	Open drained valve and drain off water and sediments		1
7	Fuel filter	Watch for fuel pressure indicator		
8	Collent (Radiator) level	Check and ensure coolant level in 1" above the baffles	Water (antifreeze mixture if used)	1
9	Final drives	Check for oil leaks	Gear oil 2	
10	Under carriage	(a) Remove mud and clean (b) Inspect tracks for wear and tear (c) Check rollers and idler for oil leaks (d) Check roller and idler for wear.		18
11	Blade equipment	(a) Check blades 'C' fame for distortion cracks or damage. (b) Check all cutting edges end bits for wear and tear (c) Check upper and lower struts for damage/hunt, pins and bushes for wear and tear (d) Check all mounting bolts and bushings for looseness or wear		4
12	Hydraulic system	(a) Check cylinder for oil seal. (b) Check all piping and hose connection for oil leaks or damages (c) Check for leaks at hydraulic pump and inspect drive coupling for wear and tear (d) Inspect control valve for leaks and efficient function.		2

13	FIP and Governor	Checks of leaks	Engine oil	
14	Oil cooler	Checks of leaks		
15	Battery terminals and vent plunges	Check for tightness and clear		
16	Wiring	Check for cracked or frayed insulation, broken wire on loose connected.		
17	Torque converter (if equipped)	Check for leaks		
18	Grease Nipples			
	(a) Engine clutch release bearing (Torque converter only)	Grease	Grease	1
	(b) Torque converter rear bearing	-do-	-do-	2
	(c) Torque converter input shaft	-do-	-do-	1
	(d) Upper struts	-do-	do-	4
	(e) Diagonal struts	-do-	-do-	2
	(f) Hyd control	-do-	-do-	5
	(g) Hyd pump pilot flange	-do-	-do-	1
	(h) Gimble tronion ring and cross tube	-do-	-do-	6
	(j) Piston rod	-do-	-do-	2
	(k) Rod and bearings	-do-	-do-	3

Note:-

Engine Air cleaner Oil and Hydraulic steering system

(a)	Above + 90 ⁰ F to 32 ⁰ F	-	Use SAE 30/HD 30
(b)	32 ⁰ F to 25 ⁰ F	-	Use SAE 10W/HD 10
(c)	Below 25 ⁰ F	-	30 quarts of SAE 10W oil diluted with 4 quarts of Kerosen (Engine only)

Transmission – Oil Grades

(a)	Above 32 ⁰ F	-	Use SAE 30/HD30
(b)	Below 32 ⁰ F	-	Use SAE 10W
(c)	Hydraulic system Dozer	-	Use SAE 10W H/D in all temp.

Sprocket driving housing , track roller, track edler and front idler lubricating oil grades

(a)	Above 32 ⁰ F	-	Multipurpose type gear lubricant/SAE 140 H/D oil
(b)	+ 32 ⁰ F to – 20 ⁰ F	-	Multipurpose type gear lubricant/SAE 80 H/D oil

Grease Nipple -Grades

- (a) Above 15⁰ C - Use Grease No. 2
- (b) 15⁰ C to - 10⁰ C - Use Grease No. 1
- (c) Below - 10⁰ C - Use Grease No '0'

Refueling of diesel fuel tank must be done at the end of days works as enough time is given for settling down the water and sediments.

When the fuel pressure indicator shows the pointer in the red or change filter carrier with engine running, it means one or both the fuel filters need replacement.

If excessive foam is seen in the hydraulic tank it may be due to poor quality of oil or too little oil is being used.

Do not attempt to adjust the FIP and governor since it is not a field workshop

50 HOURS TASK

1	General	Carry out 10 hours tasks		
2	Air cleaner and turbo charger	(a) Clean dust and air cleaner cartridge (b) Inspect for loose fitting or damaged flexible connection between air cleaner, turbo charger and intake pipes		1
3	Radiator and connections	(a) Check for leaks and loose connection. If antifreeze is used check its strength (b) Clean radiator core/spaces	Anti-freeze mixture if used	1
4	Fan belt water pickup & Gen belt	Check for tension (Depressed without efforts by thumb ¼" to ½") adjust/replace if necessary		1
5	Tracks	Check slack ¾" – 1" at straight edge.		
6	Battery	(a) Check battery electrolyte to proper level (b) Check vent holes are through	electrolyte	
7	Control valve and linkages	Inspect and lubricate linkage		1
8	<u>Grease Nipples at</u>			

(a) Front engine support	Grease	Grease	1
(b) Shifter cross bar (Torque convertor only)	-do-	-do-	3
(c) Engine clutch shaft bearing	-do-	-do-	1
(d) Engine clutch universal joint	-do-	-do-	1
(e) Engine clutch pilot bearing	-do-	-do-	1
(f) Engine clutch release bearing and sleeve	-do-	-do-	2
(g) Engine clutch cam shaft bearing	-do-	-do-	3
(h) Engine clutch release shaft bearing			
(j) Clutch hand lever			
(k) Engine clutch release shaft bearing (Torque convertor only)	-do-	-do-	2
(l) Torque convertor universal joint	-do-	-do-	1
(m) Brake pedal shaft			
(n) Manual brake operating rod guide	-do-	-do-	2
(o) Track frame roller guide	-do-	-do-	1
(p) Diagonal brace	-do-	-do-	1
(q) Track frame pivot ball	-do-	-do-	2
(r) Hyd pump universal joint	-do-	-do-	2
	-do-	-do-	2
	-do-	-do-	2

Note:-

Engine Air cleaner Oil and Hydraulic steering system

(a)	Above + 90 ⁰ F to 32 ⁰ F	-	Use SAE 30/HD 30
(b)	32 ⁰ F to- 25 ⁰ F	-	Use SAE 10W/HD 10
(c)	Below - 25 ⁰ F	-	30 quarts of SAE 10W oil diluted with 4 quarts of Kerosen (Engine only)

Transmission – Oil Grades

(a)	Above 32 ⁰ F	-	Use SAE 30/HD30
(b)	Below 32 ⁰ F	-	Use SAE 10W

Hydraulic system Dozer - Use SAE 10W H/D in all temp.

Sprocket driving housing , track roller, track edler and front idler lubricating oil grades

(a) Above 32⁰ F - Multipurpose type gear lubricant/SAE 140 H/D oil

(b) + 32⁰ F to - 20⁰ F - Multipurpose type gear lubricant/SAE 80 H/D oil

Grease Nipple -Grades

(a) Above 15⁰ C - Use Grease No. 2

(b) 15⁰ C to - 10⁰ C - Use Grease No. 1

(c) Below - 10⁰ C - Use Grease No '0'

100 HOURS TASK

1	General	Carry out 10 and 50 hours task		
2	Engine crack case	Drain the oil while the engine is hot. Flush and refill with fresh oil	Engine oil	1
3	Air cleaner	Remove and clean element		1
4	Battery	Inspect for cracks and corroded terminals		2
5	Hydraulic	Clean oil filter		1
6	Orifice filter	Clean filter and vent hole		1
7	Torque converter (if equipped)	Check for efficient action		1
8	Front idlers	Lubricate	Add oil	1
9	Carrier Rollers	Lubricate	Check oil	4
10	Engine clutch pedal/handle	Check free movement of pedal should have 2 ¼" adjust if necessary		1
11	Steering brake	Check brake free travel adjust if it exceeds ½" -1"		2
12	Hour meter	Check for efficient working		1

Note:-

Engine Air cleaner Oil and Hydraulic steering system

(a) Above + 90⁰ F to 32⁰ F - Use SAE 30/HD 30

(b) 32⁰ F to 25⁰ F - Use SAE 10W/HD 10

(c) Below 25⁰ F - 30 quarts of SAE 10W oil diluted with 4 quarts of Kerosen (Engine only)

Transmission – Oil Grades

(a) Above 32⁰ F - Use SAE 30/HD30

(b) Below 32⁰ F - Use SAE 10W

Hydraulic system Dozer - Use SAE 10W H/D in all temp.

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- (b) + 32⁰ F to - 20⁰ F - Multipurpose type gear lubricant/SAE 80 H/D oil

Grease Nipple -Grades

- (a) Above 15⁰ C - Use Grease No. 2
- (b) 15⁰ C to 10⁰ C - Use Grease No. 1
- (c) Below 10⁰ C - Use Grease No '0'

Watch metal particles or other material in the drained oil, report accordingly to workshop.

250 HOURS TASK

1	General	Carry out 10,50 and 100 hours task	
2	Crack case breather	Remove and clean, replace element if necessary	1
3	Hyd cylinder hose and fittings	Tighten nuts, bolts and clamps etc.	1
4	Diagonal trace	Tighten diagonal bolts	
5	C Frame and trunion	Check for distortion	
6	<u>Grease Nipple</u> Transmission gear shaft		

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Engine Air cleaner Oil and Hydraulic steering system

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- (b) 32⁰ F to 25⁰ F - Use SAE 10W/HD 10
- (c) Below 25⁰ F - 30 quarts of SAE 10W oil diluted with 4 quarts of Kerosen (Engine only)

Transmission – Oil Grades

- (a) Above 32⁰ F - Use SAE 30/HD30
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Grease Nipple -Grades

- (a) Above 15⁰ C - Use Grease No. 2
- (b) 15⁰ C to 10⁰ C - Use Grease No. 1
- (c) Below 10⁰ C - Use Grease No '0'

CHECK CARD : PREVENTIVE MAINTENANCE
(ORIGINAL/DUPLICATE)

1. Project 4. Make & Type CROWLER TRACTOR
 2. Task Force..... 5. TD-25
 3. Unit 6. BA/EM NO.
 7. Location

Action
 After carrying out the preventative maintenance Task, IC Mobile maintenance team will enter its date in the month's column below and initial.

Srl No.	Tasks	J	F	M	A	M	J	J	A	S	O	N	D
1	08 Hours												
	(a)												
	(b)												
	(c)												
	(d)												
	(e)												
	(f)												
	(g)												
	(h)												
	(j)												
2	100 Hours												
	(a)												
	(b)												
	(c)												
3	250 Hours												
	(a)												
	(b)												
4	500 Hours												
	(a)												
5	1000 Hours												
6	2000 Hours												

Signature of SO1/SO2 EME Project

Date

Remarks

Note : Column 'J' to 'D' stands for months of the year.